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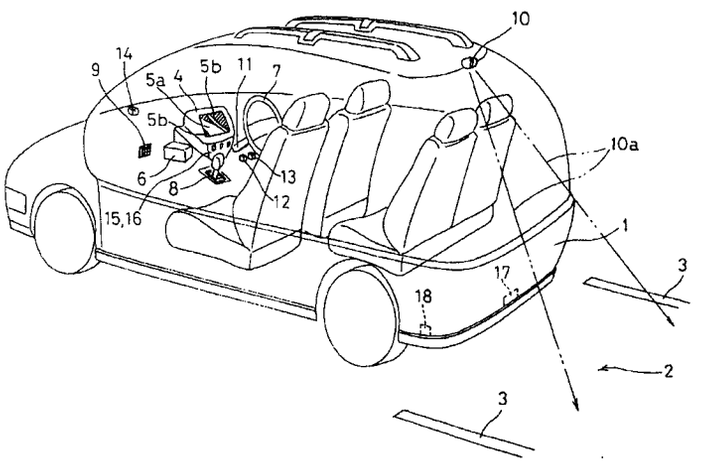
(54) Vehicle drive assist system

(57) A vehicle drive assist system comprising a camera (10) for picking up an image of an area existing in an advancing direction of a vehicle; display means (4) for displaying the image picked up by the camera; steering angle detecting means (12) for detecting a steering angle for steering the vehicle; traveling path predicting means (20) for predicting a traveling path of the vehicle on the basis of the steering angle detected by the steering angle detecting means; and drive assist means for overlaying on the display means drive assist information containing the vehicle predictive traveling path predicted by the traveling path predicting means and guide lines prolonged from the lines defining the width of the vehicle body on the image of the area existing in the vehicle advancing direction.

FIG. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 5278

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	21 March 2001	Wiberg, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

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Application Number
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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 5278

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	21 March 2001	Wiberg, S

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 30 5278

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-15 26

   Variable display
   The problem of detecting the predicted travelling path on the display is solved by varying it's brightness in accordance with the environment.

2. Claim : 16

   Reverse gear detecting
   The problem of informing the driver that the gear is in reverse is solved by changing a display.

3. Claims: 17-19

   Obstacle sensor
   The problem of detecting an obstacle is solved by an obstacle sensor.

4. Claim : 20

   Safety check
   The problem of urging the driver to do a safety check is solved by showing an image on the display.

5. Claim : 21

   End of parking
   The problem of showing the end of parking is solved by changing the display.

6. Claim : 22 23

   Speed limiting
   The problem of when to limit the speed is solved by an obstacle sensor.

7. Claim : 24 25

   Lamp
   The problem of illuminating the backward area is solved by using a lamp.

8. Claims: 27-30

   Switching
   The problem of selecting between normal and series parking mode is solved by switching.

9. Claims: 31-52

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 30 5278

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

Plurality of cameras
The problem of covering different areas is solved by using a plurality of cameras.

10. Claims: 53-55

Storing the image
The problem of acquiring information is solved by storing the image.

11. Claim : 56

Camera on the top
The problem of showing an image around the vehicle as viewed from the top is solved by mounting the camera on the top.

12. Claims: 57-59

Changing the display
The problem of showing the backward area more brightly is solved by changing the display.

13. Claims: 60-65 74

3-dimensional image
The problem of assisting the driver about the height of the vehicle is solved by adding a 3-dimensional image indicating the height.

14. Claim : 66 67

Steering guide
The problem of moving the vehicle to the target parking position is solved by presenting a steering guide.

15. Claims: 68-71

Parking space recognition
The problem of judging if a parking stopper exists in the parking space is solved by using a parking space recognition system.

16. Claim : 72

Distance lines
The problem of indicating a distance is solved by using distance lines overlaid on the image.

17. Claim : 73

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 30 5278

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

Judging parking position
The problem of judging a parking position is solved by a parking position judging means.

18. Claim : 75

Projection means
The problem of judging if other vehicles parks adjacent is solved by using a vehicle projection means

19. Claims: 76-78

Plane model
The problem of displaying a view of a parking space is solved by using a plane model.

20. Claim : 79

Timer
The problem of when to end the display of the backward area is solved by using a timer.

21. Claims: 80-86

Timing judging means
The problem of when to reversely turn the steering wheel is solved by using a timing judging means.

All claims relate to a drive assist system with a camera and display showing an image of an area into which the vehicle is about to advance. Such a drive assist system is known in the state of the art, see abstract and figures of JP1014700, which shows all the features of claims 1 and 2.

Given the technical features common to all (groups of) claims identified are known or obvious, no common inventive concept can be seen in the remaining special technical features which relate to different problems and/or solutions.

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	21 March 2001	Wiberg, S

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 30 5278

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21-03-2001

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82